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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Takefumi Oguma

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EXAMINER

SINGH, DALZID E

ART UNIT

PAPER NUMBER

2633

DATE MAILED: 01/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,531

Applicant(s)

OGUMA, TAKEFUMI

Examiner

Dalzid Singh

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 12-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8,9 and 21 is/are allowed.
- 6) ☒ Claim(s) 1,2,5,7,12-14 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 3,4,6,15 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “level calculation means and level adjusting means” of claims 6 and 18; and “level control means” of claim 9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 6, 9, 12 and 18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 6 and 18 recite “level calculation means” and “level adjusting means”.

There is no structure of circuit diagram provided to teach a person of ordinary skill how the level calculation means and level adjusting means is coupled to the system.

Therefore the specification fails to provide enabling disclosure for claim 6.

Claim 9 recites, “level control means”. There is no structure of circuit diagram provided to teach a person of ordinary skill how the level control means is coupled to the system. Therefore the specification fails to provide enabling disclosure for claim 9.

Claim 12 recites elements which corresponds to Fig. 11, there is no structure or circuit diagram provided to teach a person of ordinary skill how the element of Fig. 11 is coupled to Fig. 1. Therefore the specification fails to provide enabling disclosure for claim 12.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 5, 7, 12-14 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen et al (US Patent No. 6,445,477) in view of MacDonald et al (US Patent No. 6,011,623).

Regarding claim 1, Madsen et al disclose optical communication system for monitoring light source, as shown in Fig. 1, comprising:

a Mach-Zehnder circuit (11) that receives a light beam (from source (10)), branches the received light beam into two light beams, and transmits each of the light beams, exhibiting a periodic optical transmittance-optical frequency characteristic with a period of a frequency interval corresponding to a predetermined free spectral range (it is well known that light transmitted through Mach-Zehnder will result in periodic optical transmittance-optical frequency characteristic; as the light travel through each path (16A, 16B, 16C and 16D) of the Mach-Zehnder circuit, it will experience a period of a frequency interval corresponding to a predetermined free spectral range; see also applicant specification page 10, lines 4-11);

a first photoelectric conversion means (12A) and second photoelectric conversion means (12B) each for receiving a respective one of two light beams that have emerged from said Mach-Zehnder circuit; and

a calculation means (23) for calculating a predefined discrimination formula to evaluate a wavelength change in each of said light beams based on conversion outputs of said first photoelectric conversion means and said second photoelectric conversion means,

wherein said conversion outputs change responsively to a wavelength change in accordance with said optical transmittance-optical frequency characteristic (since the output of the conversion means is based on the input to the conversion means, it is well known that the conversion output change in accordance with optical transmittance-optical frequency characteristics input to the conversion means).

Madsen et al disclose Mach-Zehnder circuit (11) which provide different phase of the light signal (see col. 2, lines 8-13) and differ from the claimed invention in that Madsen et al do not specifically disclose the two light having a phase difference of 180° . MacDonald et al is cited to show Mach-Zehnder circuit which provides a phase difference of 180° (see col. 5, lines 37-44). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to adjust the Mach-Zehnder circuit of Madsen et al such that it provides a phase difference of 180° as taught by MacDonald et al. One of ordinary skill in the art would have been motivated to do such in order to reduce crosstalk between signals.

Regarding claim 2, the combination of Madsen et al and MacDonald et al differs from the claimed invention in that the combination does not disclose that the Mach-Zehnder circuit is adjusted in advance such that the wavelength to be controlled is included in a wavelength region that corresponds to a frequency region in which the

Art Unit: 2633

optical transmittance-optical frequency characteristic curve of said Mach-Zehnder circuit changes steeply. However, it would have been obvious to an artisan of ordinary skill in the art to adjust the Mach-Zehnder circuit such that the wavelength to be controlled is included in a wavelength region that corresponds to a frequency region in which the optical transmittance-optical frequency characteristic curve of said Mach-Zehnder circuit changes steeply. One of ordinary skill in the art would have been motivated to do such in order to provide a desired operation of the circuit.

Regarding claim 5, as shown in Fig. 1, Madsen et al show wavelength control means for detecting change in wavelength based on the calculation result obtained by said calculation means and adjusting wavelength to a preset value (see col. 2, lines 62-67 to col. 3, lines 1-5).

Regarding claims 7 and 19, Madsen et al differ from the claimed invention in that Madsen et al do not disclose the wavelength interval that corresponds to said free spectral range is identical to the wavelength interval of the ITU (International Telecommunications Union) grid. However, MacDonald et al teach wavelength corresponds to ITU grid (see col. 4, lines 65-67 to col. 5, lines 1-8 and lines 62-66; and col. 6, lines 15-23). Therefore it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide wavelength corresponding to ITU grid as taught by MacDonald et al. One of ordinary skill in the art would have been motivated to do such in order to provide compatibility with international standard.

Regarding claim 13, the wavelength of said light beams is controlled by varying

at least one of a drive current of a light source of said light beams and an ambient temperature (see col. 3, lines 11-13 of Madsen et al).

Regarding claim 14, as shown in Fig. 1, Madsen et al show that the Mach-Zehnder circuit comprises a single-side Mach-Zehnder circuit.

Regarding claim 17, as shown in Fig. 1, Madsen et al show wavelength control means for detecting change in wavelength based on a calculation result obtained by said calculation means and adjusting said wavelength to a preset value (see col. 2, lines 62-67 to col. 3, lines 1-20; since the wavelength is tunable, therefore it would have been obvious to adjust it to a preset value).

Regarding claim 18 (as far as understood), as shown in Fig. 1 of Madsen et al, the combination shows calculation means (23) for calculating the conversion outputs of said first photoelectric conversion means (12A) and said second photoelectric conversion means (12B) to evaluate an intensity variation in a total amount of light that emerges from said Mach-Zehnder circuit (11); and a wavelength control for compensating for a variation in a level of light that emerges from said Mach-Zehnder circuit based on said the conversion outputs (see col. 2, lines 62-67 to col. 3, lines 1-20). The combination differs from the claimed invention in that the combination does not disclose sum of the conversion outputs. However, it would have been obvious to an artisan of ordinary skill in the art to provide sum of the conversion means. One of ordinary skill in the art would have been motivated to do such in order to detect and compare cumulative intensity of the signal to a threshold.

6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madsen et al (US Patent No. 6,445,477) in view of MacDonald et al (US Patent No. 6,011,623) and further in view of Tachikawa et al (US Patent No. 5,414,548).

Regarding claim 20, the combination of Madsen et al and MacDonald et al differs from the claimed invention in that the combination does not disclose an arrayed waveguide diffraction grating for receiving a wavelength-division-multiplexed optical signal and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals. Tachikawa et al is cited to show arrayed waveguide grating (see Fig. 1) for receiving a wavelength-division-multiplexed optical signal (λ_0 to λ_7) and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals (see col. 5, lines 30-53). Therefore, it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide arrayed waveguide grating as taught by Tachikawa et al to the system of the combination. One of ordinary skill in the art would have been motivated to do this in order to separate the multiplexed channel into individual channel.

Allowable Subject Matter

7. Claims 8 and 21 are allowed.

Claim 21 is allowable because the prior arts of record do not teach or suggest an optical communication system, comprising:

an optical transmission means for transmitting optical signals of different wavelengths in parallel; and

nodes arranged midway on an optical transmission path, wherein said optical transmission means and said nodes each have an output monitor/control device, said output monitor/control device comprising;

an arrayed waveguide diffraction grating for receiving a wavelength-division-multiplexed optical signal and demultiplexing the multiplexed optical signal to generate demultiplexed optical signals;

a plurality of Mach-Zehnder circuits, which receives a demultiplexed optical signal, branches the demultiplexed optical signal into two light beams having a phase difference of 180° , and transmits each of these light beams, exhibiting a periodic optical transmittance-optical frequency characteristic having a period of a frequency interval that corresponds to a predetermined free spectral range; and calculation means for calculating a predefined discrimination formula for evaluating a wavelength change in said light beams.

8. Claims 3, 4, 15 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalzid Singh whose telephone number is (571) 272-3029. The examiner can normally be reached on Mon-Fri 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DS
December 28, 2005

Dalzid Singh